

REMARKS

Favorable reconsideration is respectfully requested in light of the following remarks, wherein Claim 1 has been amended, and Claims 8-10 have been canceled. Currently, Claims 1-7 are pending in the present application.

As an initial matter, the drawings stand objected to for not showing features of the claims. As a result, the drawings have been amended to show the feature defined in dependent Claim 7. In addition, Applicants have amended the specification to provide clear support for the claimed subject matter. No new matter has been added, because these claims were part of the original specification. Claim 8 has been canceled from the application. Accordingly, withdrawal of the drawing objections and claim rejections under 35 U.S.C. §112, second paragraph, is respectfully requested.

Claim 1 stands rejected under 35 U.S.C. §112, first and second paragraphs, because the Examiner alleges that “the transition from the front end section of each cutting groove forms a sharp cutting edge with the front end face of the cutting part”, was not originally described in the specification. However, Applicants respectfully disagree. In particular, with reference to Figs. 3b and 3c, the cutting edge 4 is more clearly labeled. The cutting edge 4 runs along the front end face of the shank end mill. The sharp cutting edge is clearly designated in the diagram. Since the front end of the milling tool substantially corresponds to the horizontal line or may have a slight release angle, it is thus clear that the cutting edge 4 as formed is a sharp cutting edge. Accordingly, Applicants submit that Claim 1 is sufficiently enabled and definite. With regard to the rejections of Claims 8-10, these claims have been canceled, rendering these rejections moot. Accordingly, withdrawal of the rejections based upon 35 U.S.C. §112, first and second paragraphs, is respectfully requested.

Claims 1-6 and 8-10 stand rejected under 35 U.S.C §103(a) as being unpatentable over U.S. Patent no. 5,609,447 to *Britzke et al.* in view of U.S. Patent Publication No. 2002/0031409 to *Sato et al.* In addition, Claim 7 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Britzke et al.* in view *Sato et al.* and further in view of U.S. Patent No. 6,585,460 to *Meece et al.*

Britzke et al. discloses a drill bit having a drill body with a cutting tip, wherein the primary or main cutting edges 20 are disposed along the cutting tip 14. One of the key features of *Britzke et al.* is that the primary cutting edges include an angular surface formed on the forward end of the rake surfaces. These features are found, for example, in the independent claims of the *Britzke et al.* patent. However, it is clear that the rounded surface relates to the main cutting edges, which are cutting into the work piece at the front end of the drill. The helically extending minor cutting edges of the drill are not cutting, but are simply provided with an adjacent land serving to keep the drill properly aligned inside the hole.

In contrast, the claimed invention requires that the transition from the front end section of each cutting groove forms a sharp cutting edge with the front end face of the cutting part. This is clearly not disclosed in *Britzke et al.*

The Examiner concedes that *Britzke et al.* does not disclose the feature of a milling cutter being an end mill having main cutting edges extending along an edge of the cutting grooves as well as being arranged substantially in a common plane. The Examiner seeks to rely upon *Sato et al.* for teaching, generally, and end mill. However, the Examiner has failed to provide the evidence as to why one having ordinary skill in the art would modify *Britzke et al.* to include the feature that the transition from the front end section of each cutting groove forms a sharp cutting edge with the front end face of the cutting part.

To the contrary, one having ordinary skill in the art applying the invention of *Britzke et al.* to a milling tool, would clearly strive to provide the corresponding feature along the main cutting edges of a milling tool. That is, the rounded main cutting edges would be applied to the helically extending main cutting edges of the milling tool, but not to the minor cutting edges at the front end thereof. In contrast, independent Claim 1 recites that the main cutting edge includes a sharp cutting edge, which is not rounded. Accordingly, neither reference, in combination or alone, discloses the patentable features of the claimed invention.

For at least the foregoing reasons, it is submitted that the shank end mill of independent Claim 1, and the claims depending therefrom, are patentably distinguishable over the applied documents. Accordingly, withdrawal of the rejections of record and allowance of the present application is earnestly solicited.

Should any questions arise in connection with this application, or should the Examiner believe a telephone conference would be helpful in resolving any remaining issues pertaining to this application, it is respectfully requested that the undersigned be contacted at the number indicated below.

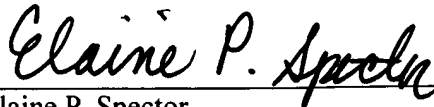
EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit

Account 50-0573. This paragraph is intended to be a CONSTRUCTIVE PETITION FOR
EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully Submitted,

Date: September 20, 2006
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IN THE DRAWINGS:

The attached replacement sheet includes changes to Figs 3b and 3c. The replacement drawing sheet, which includes Figs. 3b and 3c, replaces the replacement sheet filed previously. In this replacement drawing sheet, Figs. 3b and 3c have been amended to add reference to the cutting edge 4, and Fig 3a has been amended to designate the axial extension of the chamfer d_c and the axial extension d_t of the transition the cutting face angle to the helix angle.

Attachment: Submission of Annotated and Replacement Sheet of Drawings
Annotated Sheet Showing Changes
Replacement Sheet